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July 24, 2002

To: Examiner Tuan Dinh  
U.S. PATENT AND TRADEMARK OFFICE  
Group Art Unit 2827**APPLICATION NO. 09/512,223**1-703-305-1341

From: Christopher W. Brown

Application No.: 09/512,223Our Ref.: 104142

Number of Pages Sent (Including cover sheet):

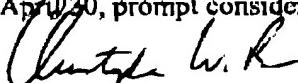
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Prepared By: Rxg

**Comments:**

Examiner Dinh:

Further to our telephone conversation today, attached are (1) a courtesy copy of the Amendment After Final Rejection and Appendix originally filed on April 30, 2002 but not yet received by you, and (2) a copy of the date-stamped postcard receipt indicating that the aforementioned papers were filed on April 30, 2002. As the application is under Final Rejection and the papers were originally filed on April 30, prompt consideration of the Amendment After Final Rejection is requested.

Christopher W. Brown  
Registration No. 38,024

Sent by: Rxg D M

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PTO RECEIPT FOR FILING OF PAPERS

The following papers have been filed:

HAND CARRY TO ART UNIT 2827  
AMENDMENT AFTER FINAL REJECTION with attached APPENDIX

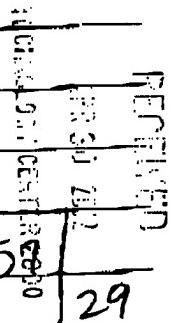
Name of Applicant: Martin MIEHLING

Serial No.: 09/512,223

Atty. File No.: 104142

Title (New Cases):

Sender's Initials: EPW:CWB:JSA/rkg



PATENT OFFICE DATE STAMP

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AND RETURNED BY MESSENGER

**PATENT APPLICATION**

**RESPONSE UNDER 37 CFR §1.116  
EXPEDITED PROCEDURE  
TECHNOLOGY CENTER ART UNIT 2827**

#15/B

Amst  
N/E

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J. McConnell  
7/25/02

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Martin MIEHLING

Application No.: 09/512,223

Filed: February 24, 2000

Group Art Unit: 2827

Examiner: T. Dinh

Docket No.: 104142

For: TRANSPONDER AND INJECTION-MOLDED PART AND  
METHOD FOR MANUFACTURING SAME

**AMENDMENT AFTER FINAL REJECTION UNDER 37 CFR §1.116**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

In reply to the Office Action mailed January 31, 2002 and the Advisory Action mailed

April 18, 2002, please amend the above-identified application as follows:

**IN THE CLAIMS:**

- B1
1. (Twice Amended) An electrical circuit comprising an integrated circuit, an antenna and one or more electrical connections between the integrated circuit and the antenna, wherein at least the integrated circuit and the antenna are encapsulated within a capsule such that the capsule mechanically connects the integrated circuit and the antenna to hold the integrated circuit and the antenna in a fixed position relative to each other, and wherein the capsule comprises a thermoplastic resin having a melting point of from 120°C to 250°C and a processing pressure of from 5 to 40 bar.

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6. (Twice Amended) Transponder comprising an electrical circuit containing at least one component suitable for interaction with an electromagnetic field encapsulated within a capsule, wherein the capsule comprises a thermoplastic resin having a melting point of from 120°C to 250°C and a processing pressure of from 5 to 40 bar, and wherein the electrical circuit is encapsulated by the thermoplastic resin such that at least an integrated circuit and an antenna of the electrical circuit are encapsulated by the thermoplastic resin and are mechanically connected by the thermoplastic resin to hold the integrated circuit and the antenna in a fixed position relative to each other.

Claims 1-38 are pending herein, with claims 1-15 being under consideration and claims 16-38 being withdrawn from consideration by way of a restriction requirement. By this Amendment, claims 1 and 6 are amended to further distinguish the invention over the teachings of U.S. Patent No. 5,800,763 (Hoppe) as discussed more fully below.

No new matter is added by this Amendment. The amendments to claims 1 and 6 are supported by the original specification at, for example, page 5, lines 26-31 (describing the characteristic of processing pressure of molding materials) and page 6, lines 18-27 (describing the processing pressure characteristic of the thermoplastic resin of the invention as being from 5 to 40 bar).

Entry of this Amendment is proper under 37 CFR §1.116 since the Amendment (a) places the application in condition for allowance (for the reasons discussed herein), (b) does not raise any new issue requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution), (c) does not present any additional claims without canceling a corresponding number of finally rejected claims, and (d) places the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the Advisory Action. Entry of the Amendment is thus respectfully requested.

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In view of the foregoing amendments and following remarks, reconsideration of this application is respectfully requested.

I. Rejection Under 35 U.S.C. §103(a)

Claims 1-15 were rejected under 35 U.S.C. §103(a) as allegedly being anticipated by U.S. Patent No. 5,800,763 (hereinafter Hoppe). This rejection is respectfully traversed.

By way of background, the presently claimed invention relates to an electrical circuit and transponder containing such electrical circuit in which an integrated circuit and an antenna are electrically connected. Because in the art of making transponders the mechanical connection between the integrated circuit and the antenna is initially comprised of only thin antenna wires (typically 20 microns to 60 microns thick), the connected integrated circuit and antenna are easily destroyed in typical further packaging processes such as lamination and molding. Thus, as discussed in the background section of the present application, making an intact electrical circuit with such design is very difficult.

The present invention addresses this problem by encapsulating at least the integrated circuit and the antenna (and preferably also the electrical connections between the integrated circuit and the antenna) in a thermoplastic resin having a melting point of from 120°C to 250°C and a processing pressure characteristic of from 5 to 40 bar such that the thermoplastic resin contacts and mechanically connects these components in a fixed relationship respective to each other. This renders the circuit easily handleable for further processing and also protects the integrity of the electrical circuit in subsequent packaging processes.

Applicant respectfully submits that Hoppe neither teaches nor suggests the electrical circuit (claim 1) or transponder (claim 6) of the presently claimed invention.

Hoppe describes a method for producing data carriers, i.e., cards with electronic modules disposed therein. The method involves producing the data carrier by pressing, with a pressing apparatus, a plastic granular material or powder around the elements to be

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incorporated into the data carrier. See column 1, line 65 to column 2, line 4. The invention is said to be an improvement over conventional injection molding techniques used to form data carriers.

Hoppe differs from the presently claimed invention in several material respects detailed below. Applicant respectfully submits that in view of these differences, one of ordinary skill in the art would not have been led to the present invention from the teachings of Hoppe.

First, in the Office Action, it was alleged that the molding compound 15 described in Hoppe to be used in making the card body corresponded to the capsule as recited in claims 1 and 6. However, as recited in each of claims 1 and 6 of the present application, the present invention requires that the capsule encapsulate at least an integrated circuit and an antenna of the electrical circuit such that the integrated circuit and the antenna are mechanically connected to be held in a fixed position relative to each other. Such is not achieved in Hoppe with molding compound 15.

For example, as explained at column 4, lines 26-28 and again at column 5, lines 17-19, Hoppe takes steps to protect the integrated circuit component prior to subjecting the component to the pressing operation in which the card body is formed. In particular, Hoppe indicates that the integrated circuit and bonding wires thereof are first sealed in a casting compound prior to being incorporated into the card body in the pressing operation.

As such, molding compound 15 that is formed into the card body is not a capsule as recited in claims 1 and 6 of the present application because it does not mechanically connect an integrated circuit and an antenna to fix these components relative to each other as required of the capsule in the present invention. Pre-pressing steps are taken in Hoppe to protect the element, and the molding compound is not used to protect or mechanically connect the components of the element.

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As to the casting compound, Hoppe provides no teachings concerning what this material is or how it is used with any specifics whatsoever. Thus, the casting compound of Hoppe also cannot be said to have taught or suggested the capsule recited in each of claims 1 and 6.

Moreover, one of ordinary skill in the art would not have been led to modify the use made of the card body molding compound in Hoppe to have achieved the present invention. Hoppe teaches that the molding compound 15 is to be used in forming a card body. Hoppe does not teach or suggest that the molding compound is to have any protective function at all as with the capsule of the present invention. Still further, the capsule of the present invention preferably encapsulates only the component (integrated circuit and antenna) itself to protect such component. The encapsulated component may then be handled and incorporated into a card as in Hoppe, for example by injection molding as explained at page 5, lines 1-11 and page 9, lines 24-29. As Hoppe describes only the formation of the card body itself and does not teach or suggest separate encapsulating protection means for the component as in the present invention, one of ordinary skill in the art would not have been led to the present invention from the teachings of Hoppe.

Second, as acknowledged in the Office Action, Hoppe does not teach or suggest that the molding compound 15 or the casting compound must be comprised of a thermoplastic resin having a melting point in the range of from 120°C to 250°C and a processing pressure characteristic of from 5 to 40 bar (i.e., a thermoplastic moldable at low temperature and low pressure). The Patent Office alleged that this nevertheless would have been obvious to one of ordinary skill in the art. Applicant respectfully disagrees.

As nothing in Hoppe teaches or suggests any melting point property of the molding compound 15 or casting compound, it cannot be concluded that one of ordinary skill in the art somehow would have found the use of such a thermoplastic resin obvious. There is simply

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no basis in the teachings of the art to have led one of ordinary skill in the art to have selected such a thermoplastic resin. Applicant respectfully submits that the rejection is improper for this reason.

Further, it must be emphasized that Hoppe teaches replacing injection molding with press molding in formation of the card body in order to use a formation procedure that does not require the expensive equipment required with injection molding. See column 1, lines 45-55 of Hoppe. Hoppe does not teach or suggest that the molding compound used in forming the card body is any different than that used in the prior art. As such, Hoppe clearly teaches using the same molding compounds conventionally used in the art of making card bodies (i.e., in injection molding), just with a different method of processing.

As explained at page 5, lines 27-31 of the present specification, conventional molding materials in the art are polyamides having melting temperatures of 300°C to 400°C and require typical processing pressures of 400 to 1,200 bar. From the teachings of Hoppe, one of ordinary skill in the art would have been led to still use such a conventional molding material for formation of the card body, and thus would not have been led to the present invention (and in fact would have been led away from the present invention) in which the thermoplastic resin must be moldable (i.e., have a processing pressure characteristic) at low pressures of 5 to 40 bar. This is clear from the fact that Hoppe requires a pressing process in which higher pressure is applied in melting and shaping the molding compound 15, thus indicating the use of a conventional high melting point compound that requires higher temperatures and pressures (via pressing) to process. Hoppe merely indicates that the process described therein is an improvement over injection molding in requiring less expensive equipment, not that it replaces the molding compound with a different, lower melting point material.

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An advantage to the use of thermoplastic resins that are moldable at lower pressure, for example of 5 to 40 bar, and preferably 10 bar or less, is that the use of lower pressures enables the components to be encapsulated without causing any substantial damage to the components as with the injection molding process or similar high pressure processes such as described in Hoppe.

The fact that Hoppe uses higher pressures in the pressing process described therein, and thus uses molding compounds of higher melting temperatures, is further evidenced by the fact that Hoppe describes that the components should preferably be first processed in a casting compound. This is also conventional in the art of injection molding in an effort to protect the components. Such is thus still further evidence that the molding compound 15 described in Hoppe is a conventional compound used in injection molding, i.e., a compound having a high melting temperature and requiring a higher pressure to melt and shape.

Regarding dependent claims 7 and 10, the Patent Office alleged that the selection of a polyamide or a polyvinyl chloride would have been a matter of obvious design choice.

Applicant again must disagree. First, design choice alone has repeatedly been held to not equate to obviousness, and the mere allegation of design choice alone thus is not sufficient to establish a prima facie case of obviousness. Further, for all the same reasons detailed above, Hoppe does not teach or suggest the selection of a thermoplastic resin having a melting temperature of from 120°C to 250°C and a processing pressure characteristic of from 5 to 40 bar at all, and thus it would not have been an obvious matter of design choice for one to have selected a polyamide or a polyvinyl chloride resin meeting such criteria as recited in claims 7 and 10.

Finally, regarding dependent claim 14, this claim recites that the capsule includes a material used as a mold during encapsulation with the thermoplastic resin. Hoppe fails to teach or suggest any feature even remotely relevant to this aspect of the claimed invention.

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Column 3, lines 30-31 cited by the Patent Office merely indicates that the molding compound 15 is used as the molding material in forming the card body. This portion of Hoppe does not teach or suggest, nor does any other portion of Hoppe teach or suggest, that mold 9 is ever to be incorporated into the final card body.

For all the foregoing reasons, Applicant respectfully submits that Hoppe fails to teach or suggest the invention of claims 1-15. Reconsideration and withdrawal of this rejection are respectfully requested.

II. Rejoinder

Claim 16 recites a method for manufacturing a transponder including all of the limitations of claim 6. Accordingly, upon allowance of claim 6, claims 16-28 should be rejoined with the application and similarly allowed.

III. Conclusion

In view of the foregoing amendments and remarks, Applicant submits that claims 1-38 are in condition for allowance. Should the Examiner believe that anything further

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would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,



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EPW:CWB:JSA/rwg

Date: April 30, 2002

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